

Amendment and Response

Applicant: Andrew Harvey Barr et al.

Serial No.: 10/621,661

Filed: July 17, 2003

Docket No.: 200308575-1 (H300.212.101)

Title: PARTIALLY VOIDED ANTI-PADS

REMARKS

The following remarks are made in response to the Office Action mailed March 9, 2005. Claims 1-34 were rejected. With this Response, claim 1 has been amended. Claims 1-34 remain pending in the application and are presented for reconsideration and allowance.

Drawing Objections

The drawings are objected to because the sectional views are not properly cross-hatched. In addition, Figure 3 is objected to for not being designated by a legend such as "prior art." Figures 2-5 have been amended to include proper cross-hatching and to designate Figure 3 as prior art. Drawing elements 10, 30, 200, 210, 220, and 300 have not been cross-hatched to more easily distinguish those element features. Therefore, Applicants respectfully request that the objections to the drawings be withdrawn.

Claim Rejections under 35 U.S.C. § 102

The Examiner rejected claims 1 and 8 under 35 U.S.C. § 102(b) as being anticipated by the Itoh U.S. Patent No. 5,828,555.

Applicants submit that the Itoh Patent fails to teach or suggest the invention of amended independent claim 1. Amended independent claim 1 includes the limitation of an anti-pad around the via, the anti-pad comprising a pattern of conductive material having a plurality of voids. The through holes 44 disclosed in the Itoh Patent do not have anti-pads around them comprising a pattern of conductive material having a plurality of voids. Therefore, amended independent claim 1 is believed to be allowable over the Itoh Patent.

Dependent claim 8 further defines patentably distinct claim 1. Accordingly, dependent claim 8 is also believed to be allowable over the Itoh Patent. Applicants respectfully request that the above rejections to claims 1 and 8 under 35 U.S.C. § 102(b) be withdrawn and that these claims be allowed.

The Examiner rejected claims 1-3, 6, 7, 9-13, 15-22, and 24-34 under 35 U.S.C. § 102(e) as being anticipated by the Brodsky et al. U.S. Patent Application Publication No. 2004/0188135.

Applicants submit that the Brodsky et al. Patent Application fails to teach or suggest the invention of amended independent claim 1 and independent claims 17 and 24. Amended

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independent claim 1 includes the limitation of an anti-pad around the via, the anti-pad comprising a pattern of conductive material having a plurality of voids. Independent claim 17 includes the limitation of an anti-pad between the conductive plane and the via signal barrel, the anti-pad having a pattern of conductive material. Claim 24 includes a similar limitation to claim 17 including forming a partially voided anti-pad between the conductive plane and the via signal barrel. The Brodsky et al. Patent Application fails to teach or suggest these claimed limitations. More particularly, the Examiner cited figures 1-4 and the description for Figures 1-4 of the Brodsky et al. Patent Application fail to teach or suggest the anti-pads of claims 1, 17, and 24.

Applicants submit that the anti-pad 500 disclosed in the Brodsky et al. Patent Application does not teach or suggest the anti-pad as recited in independent claim 1, 17, and 24. As recited in independent claims 1, 17, and 24, the anti-pads create a void between the via and the conductive plane which can prevent shorts between the vias and conductive planes through which vias may pass. For an example embodiment describing anti-pad features of claims 1, 17, and 24, the Examiner is directed to the Detailed Description of the present application at page 4, lines 13-15. In contrast, the Brodsky et al. Patent Application discloses anti-pads as a wire mesh structure or an anti-pad mesh structure provided in an electrically conductive material defining one or more of the power and ground planes 104 of the printed circuit board 100 in predefined areas proximate to a Land Grid Array (LGA) site. The wire mesh structure or the anti-pad mesh structure are disposed in regions surrounding the LGA site or within a region of the LGA module site. (Para. 0027). The anti-pad 500 disclosed in the Brodsky et al. Patent Application forms the conductive plane 104. The anti-pad 500 is not used to create a void between a via and the conductive plane 104.

The Brodsky et al. Patent Application does disclose clearance pads 206 that prevent shorts between a via and the conductive plane 104. Plated through holes 204 are surrounded by a respective clearance pad 206 to prevent the plated through holes 204 from connecting to the plane 104. (Para. 0032). The clearance pads 206 do not include the pattern of conductive material 400 having the plurality of voids 402. Clearance pads 206 include a single voided area and do not include a pattern of conductive material. (Figs. 4 and 5). Therefore, the Brodsky et al. Patent Application does not teach or suggest an anti-pad comprising a pattern

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of conductive material as recited in claims 1 and 17 or a partially voided anti-pad as recited in claim 24.

Anti-pad 500 and wire mesh structure 400 of the Brodsky et al. Patent Application form the power or ground plane 104, not clearance pads 206. The anti-pad 500 of the Brodsky et al. Patent Application does not teach or suggest that the anti-pad is between the conductive plane and the via signal barrel since the anti-pad 500 defines the conductive plane. Therefore, the anti-pad 500 is not and cannot be between a through hole 204 and the conductive plane 104. Rather, clearance pad 206 is between a through hole 204 and the conductive plane 104.

In view of the above, independent claims 1, 17 and 24 are believed to be allowable over the Brodsky et al. Patent Application. Dependent claims 2-3, 6, 7, 9-13, and 15-16 further define patentably distinct independent claim 1. Dependent claims 18-22 further define patentably distinct independent claim 17. Dependent claims 25-34 further define patentably distinct independent claim 24. Accordingly, dependent claims 2-3, 6, 7, 9-13, 15-16, 18-22 and 25-34 are also believed to be allowable over the Brodsky et al. Patent Application. Accordingly, applicants respectfully request that the above rejections of claims 1-3, 6, 7, 9-13, 15-22, and 24-34 under 35 U.S.C. § 102(e) be withdrawn and that these claims be allowed.

Claim Rejections under 35 U.S.C. § 103

The Examiner rejected claim 14 under 35 U.S.C. § 103(a) as being unpatentable over the Brodsky et al. Patent Application.

Dependent claim 14 further defines patentably distinct independent claim 1. Accordingly, dependent claim 14 is also believed to be allowable over the Brodsky et al. Patent Application. Accordingly, Applicants respectfully request that the above rejection of claim 14 under 35 U.S.C. § 103(a) be withdrawn and that this claim be allowed.

The Examiner rejected claims 4 and 5 under 35 U.S.C. § 103(a) as being unpatentable over the Brodsky et al. Patent Application in view of Applicant's allegedly admitted prior art disclosed at page 1, lines 15-30 of the present specification.

Claims 4 and 5 further define patentably distinct independent claim 1. Accordingly, dependent claims 4 and 5 are also believed to be allowable over the Brodsky et al. Patent

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Application and any admitted prior art disclosed in the present specification. Accordingly, Applicants respectfully request that the above rejections of claims 4 and 5 under 35 U.S.C. § 103(a) be withdrawn and that these claims be allowed.

The Examiner rejected claim 23 under 35 U.S.C. § 103(a) as being unpatentable over the Brodsky et al. Patent Application in view of the Japp et al. U.S. Patent No. 6,329,603.

Dependent claim 23 further defines patentably distinct independent claim 17. Accordingly, dependent claim 23 is also believed to be allowable over the Brodsky et al. Patent Application and the Japp et al. Patent. Accordingly, Applicants respectfully request that the above rejection of claim 23 under 35 U.S.C. § 103(a) be withdrawn and that this claim be allowed.

CONCLUSION

In view of the above, Applicants respectfully submit that pending claims 1-34 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 1-34 is respectfully requested.

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No fees are required under 37 C.F.R. 1.16(b)(c). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 08-2025.

The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

Any inquiry regarding this Amendment and Response should be directed to either David A. Plettner at Telephone No. (408) 447-3013, Facsimile No. (408) 447-0854 or Patrick G. Billig at Telephone No. (612) 573-2003, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

Hewlett-Packard Company
Intellectual Property Administration
P.O. Box 272400
Fort Collins, Colorado 80527-2400

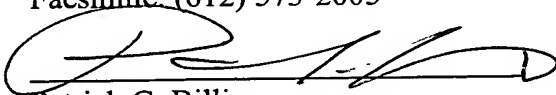
Respectfully submitted,

Andrew Harvey Barr et al.

By their attorneys,

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CERTIFICATE UNDER 37 C.F.R. 1.8: The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail, in an envelope address to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 9 day of June, 2005.

By 
Name: Patrick G. Billig

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IN THE DRAWINGS

Figures 2-5 have been amended as indicated in red in the attached annotated sheets showing changes. In addition, replacement sheets incorporating the amendments to Figures 2-5 are also attached.

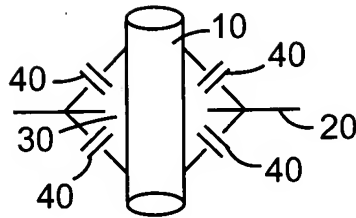


Fig. 1

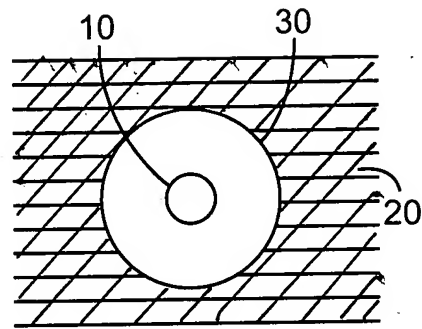


Fig. 2

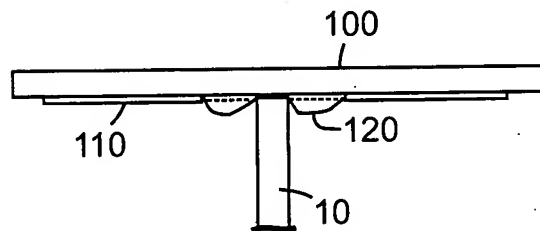


Fig. 3
(Prior Art)

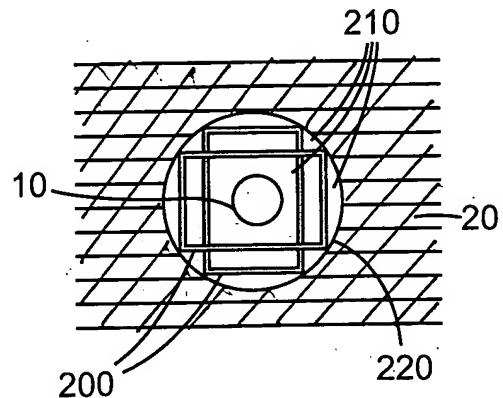


Fig. 4

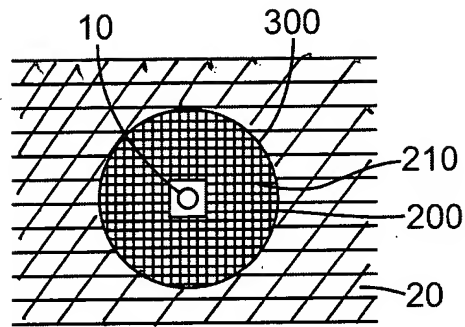


Fig. 5